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EXAMINER

ROMANO, JOHN J

ART UNIT

PAPER NUMBER

2192

DATE MAILED: 10/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/008,864

Applicant(s)

BATES ET AL.

Examiner

John J. Romano

Art Unit

2192

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 4, 5, 7-12 and 25-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4, 5, 7-12 and 25-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. Applicant's amendment and response received June 16<sup>th</sup>, 2006, responding to the March 28<sup>th</sup>, 2006, Office action provided in the rejections of claims 1, 2, 4, 5, 7-12 and 25-32, wherein claims 1, 8, 12, 25 and 28 are amended and claims 1, 2, 4, 5, 7-12 and 25-32, remain pending in the application and which have been fully considered by the examiner.

The rejection of the claims over prior art in the previous Office action is maintained in light of additional new grounds of rejection as necessitated by amendment and **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Additional Comments:

2. The examiner has a duty and responsibility to the public and to Applicant to interpret the claims as broadly as reasonably possible during prosecution. In re Prater, 56 CCPA 1381, 415 F.2d 1393, 162 USPQ 541, 1969.

Although the claims are read in light of the specification, the specification is not read into the claims. The examiner recommends clarifying the triggering expression event to not read on a variable, wherein a variable "represents a non-executable data value having a state" as presently claimed in claim 1 and other independent claims.

***Claim Rejections***

Claims 1, 2, 4, 5, 7-12 and 25-32, are pending claims, stand finally rejected in light of the claim rejections below.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2192

3. Claims 1, 4, 5 and 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Wygodny** in view of Matt et al., US 6,510,507 (new art of record and hereinafter **Matt**).

In regard to claim 1, **Wygodny** discloses:

- “A method of tracing the activity of an expression, said method comprising the machine-implemented steps of ...” (E.g., see Figure 1C & Column 2, line 59-Column 3, line 1), wherein the data element may be a variable.
- “...(a) receiving, from a user, a specification of a machine-implemented process in which a trigger expression is to be traced...” (E.g., see Figure 5 & Column 12, lines 44-47), wherein the trade option window allows the developer to specify which functions or machine-implemented process to trace.
- “...(b) receiving, from a user, a specification of the trigger expression to be traced in the machine-implemented process...” (E.g., see Figure 5 & Column 15, lines 52-55), wherein the developer may select which variables or expressions to be traced, wherein a data variable represents a state of a non executable data value.
- “...(c) responsive to steps (a) and (b), monitoring execution of said machine-implemented process to detect occurrences of a plurality of references to a location in machine memory representing a state of said trigger expression, wherein each said occurrence of a reference to a location in machine memory representing a state of said trigger expression occurs as a result of executing said machine-implemented process...” (E.g., see Figure 1B & Column 3, lines

7-12), wherein a program monitors activity during execution, wherein a data variable is a reference to a memory location representing a state of the trigger expression (variable). Also, this occurs as a result of executing a computer process.

- “...(d) responsive to each detected occurrence of a reference to said location in machine memory representing a state of said trigger expression, storing the respective state of the trigger expression at the time of the respective detected occurrence of a reference to said location in machine memory representing a state of said trigger...” (E.g., see Figure 1C & Column 26, lines 33-34), wherein responsive to a trigger expression which may be a variable, the variable or expression to be recorded.
- “...to create a history of said trigger expression within the machine-implemented process, said storing step being performed without interrupting the machine-implemented process...” (E.g., see Figure 1C & Column 26, line 33-34), wherein the trigger happens whenever the address is executed (detected) which inherently includes a read/write operation (call to memory). Causing a plurality of expressions to be stored (history).
- “...(e) restoring the state of the trigger expression when requested.” (E.g., see Figure 1C & Column 7, lines 39-43), wherein the developer analyzes the trace data.

But Wygodny does not expressly disclose “...said trigger expression representing a non-executable data value having a state...”. However, Matt discloses:

- “...said trigger expression representing a non-executable data value having a state...” (E.g., see Column 2, lines 44-47), wherein triggering on selective events, such as accessing memory locations (read or write) is disclosed.

**Wygodny** and **Matt** are analogous art because they are both concerned with the same field of endeavor, namely, real time trace and debug analysis of a computer program. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to impose triggering on events with **Wygodny**’s tracing method. The motivation to do so would have been to report certain events during tracing as taught by **Wygodny** (Column 25, line 65- Column 26, line 1).

In regard to claim 4, the rejections of base claim 1 are incorporated. Furthermore, **Wygodny** discloses:

- “...*(a) displaying the history such that the state of the trigger expression each time the trigger expression was active can be displayed separately.*” (E.g., see Figure 1C & Column 8, lines 15-20), wherein the data stored or history is displayed according to filters set by the user allowing the user to display a particular triggered expression separately if desired.

In regard to claim 5, the rejections of base claim 1 are incorporated. But **Wygodny** does not expressly disclose “...*results in an L value during the machine-implemented process.*”.

However, **Matt** discloses:

- “...*results in an L value during the machine-implemented process.*” (E.g., see Column 2, lines 44-47), wherein triggering on selective events, such as accessing memory locations (read or write) is disclosed.

In regard to claim 7, the rejections of base claim 1 are incorporated. But Wygodny does not expressly disclose "...results in an L value during the machine-implemented process."

However, Matt discloses:

- "...reference to said location in machine memory representing a state of said trigger expression is a Read and/or a Write." (E.g., see Column 2, lines 44-47), wherein triggering on selective events, such as accessing memory locations (read or write) is disclosed.

In regard to claim 8, the rejections of base claim 1 are incorporated. Furthermore, Wygodny discloses:

- "... (a) receiving, from a user, a specification of at least one attached expression; (b) ...storing the respective state of the at least one attached expression ... within the machine-implemented process; and (c) restoring the state of the at least one attached expression when requested." (E.g., see Figure 3A & Column 18, lines 30-43), wherein the developer can choose any arguments, or return values, thereby storing the state of a chosen function and respective attached expressions or variables, wherein trace can then be displayed according to the developers choice (restoring) when requested.
- "... at the time of the respective detected occurrence of a reference to said location in machine memory representing a state of said trigger expression, the states of the at least one attached expression being associated with said history of said trigger expression..." (E.g., see Figure 1C & Column 26, lines



33-34), wherein the variable or expression to be recorded (history) and corresponding attached variables.

In regard to claim 9, the rejections of base claim 1 are incorporated. Furthermore, **Wygodny** discloses:

- "...*the machine-implemented process is a computer program.*" (E.g., see Figure 6 & Column 5, lines 20-23), wherein the user can trace a program.

In regard to claim 10, the rejections of base claim 1 are incorporated. Furthermore, **Wygodny** discloses:

- "...*included in an object level trace program.*" (E.g., see Figure 6 & Column 4, lines 43-50), wherein included in a trace program which may trace object code as disclosed.

In regard to claim 11, the rejections of base claim 1 are incorporated. Furthermore, **Wygodny** discloses:

- "...*included in a debug program.*" (E.g., see Figure 1A & Column 4, lines 43-50), wherein the invention provides debugging of a computer program.

4. Claims 2, 12 and 25-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Wygodny** in view of **Matt** and further in view of **Lindsey**, US 5,896,536 (hereinafter **Lindsey**).

In regard to claim 2, the rejections of base claim 1 are incorporated. But **Wygodny** and **Matt** do not expressly disclose "...imposing a condition onto the trigger expression and storing the state of the trigger expression only when the condition is satisfied. However, **Lindsey** discloses:

- "...*(a) imposing a condition onto the trigger expression; and (b) storing the state of the trigger expression only when the condition is satisfied.*" (E.g., see Figure 6 & Column 8, lines 39-48), wherein a tracing operation is stored when a predetermined condition is detected (satisfied).

**Wygodny, Matt** and **Lyndsey** are analogous art because they are both concerned with the same field of endeavor, namely, tracing the execution path of a computer program. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to impose a trigger condition on **Wygodny's** tracing. The motivation to do so would have been to monitor the execution of the code based on selections or options from the user as suggested by **Wygodny** (Column 3, lines 7 –12), wherein the conditional trigger or expression would provide the user with further options. Furthermore, **Lyndsey** suggests "...the ability to trigger the generation of trace data based upon a specific data component so that information can be obtained relative to the data component during execution of logic units would be a valuable tool for developers in the debugging of programs". Thus it would have been obvious, to a person of ordinary skill in the art to include a conditional trace-point or trigger with **Wygodny's** tracing method.

In regard to claim 12, **Wygodny** discloses:

- "*A method of tracing the activity of an expression in an executing computer program...*" (E.g., see Figure 2 & Column 4, lines 43-44), wherein a computer program being executed is traced.
- "*...a specification of the trigger expression and any optional attachment expressions to be traced in the computer program...(f) creating a profile of*

*the trigger expression comprising storing each snapshot; (g) displaying the profile such that each snapshot can be displayed separately; and (h) restoring the state of each snapshot, when requested.”* (E.g., see Figure 3A & Column 18, lines 30-43), wherein the developer can choose any arguments, return values and selected source lines, thereby storing the state of a chosen function and attached expressions or variables (profile), wherein trace can then be displayed according to the developers choice (restoring) when requested.

But **Wygodny** does not expressly disclose “...*a trigger expression resulting in an L value during the execution of the computer program is to be traced...*”. However, **Matt** discloses:

- “...*a trigger expression resulting in an L value during the execution of the computer program is to be traced...*” (E.g., see Column 2, lines 44-47), wherein triggering on selective events, such as accessing memory locations (read or write) is disclosed.

**Wygodny** and **Matt** are analogous art because they are both concerned with the same field of endeavor, namely, real time trace and debug analysis of a computer program. Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to impose triggering on events with **Wygodny**’s tracing method. The motivation to do so would have been to report certain events during tracing as taught by **Wygodny** (Column 25, line 65- Column 26, line 1).

But **Wygodny** and **Matt** do not expressly disclose “*imposing a condition onto the trigger expression*”. However, **Lyndsey** discloses:

- “...*(c) imposing a condition onto the trigger expression...*” (E.g., see Figure 6 & Column 8, lines 39-48), wherein a tracing operation is stored when a predetermined condition is detected (satisfied).

Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to impose a trigger condition on **Wygodny**'s tracing. The motivation to do so would have been to monitor the execution of the code based on selections or options from the user as suggested by **Wygodny** (Column 3, lines 7 –12), wherein the conditional trigger or expression would provide the user with further options. Furthermore, **Lyndsey** suggests “...the ability to trigger the generation of trace data based upon a specific data component so that information can be obtained relative to the data component during execution of logic units would be a valuable tool for developers in the debugging of programs”. Thus it would have been obvious, to a person of ordinary skill in the art to include a conditional trace-point or trigger with **Wygodny**'s tracing method. See Claim 1 for remaining limitations.

In regard to claim 25, **Wygodny** discloses:

- “...*(a) initiating a user interface to exchange data input/output with a user and an electronic processing apparatus...*” (E.g., see Figure 1C & Column 2, line 59-Column 3, line 1), wherein the user interface is initiated after the user starts the program.
- “...*(b) ...receiving a trigger expression from a user...*” (E.g., see Figure 5 & Column 13, lines 50-54), wherein the developer may specify which variables or expressions to be traced (520), wherein the execution of the traced variable

triggers the trace. Furthermore, the developer opens a window that requires, or requests, the developers input.

- “...*(c) requesting a program identification of a program in which the trigger expression is to be traced...*” (E.g., see Figure 5 & Column 12, lines 44-47), wherein the trade option window allows the developer to specify, (requests from the user), which functions or machine-implemented process (program) to trace.
- “...*(d) causing the electronic processing apparatus to execute the identified program; (f) ...storing the respective state of the trigger expression...*” (E.g., see Figure 1C & Column 26, line 33-34), wherein the trigger happens (activity), storing the state of the trigger expression, whenever the address is executed (memory operation), which takes place while the identified program is executing.
- “...*(g) maintaining the capability to restore each snapshot and display each snapshot to the user.*” (E.g., see Figure 1C & Column 8, lines 15-20), wherein the data stored or history is displayed (restored) according to filters set by the user allowing the user to display a particular triggered expression separately if desired..

But Wygodny does not expressly disclose “...*(b) requesting ...a trigger expression...*”. However, it would have been obvious to one of ordinary skill in the art, at the time the invention was made to request a trigger expression from a user. The motivation to do so was provided by Wygodny (E.g., see Figure 5 & Column 13, lines 50-54), wherein the developer may specify

which variables or expressions to be traced (520), as addressed above. Thus, it would have been obvious that the means to input the specification is the equivalent to requesting the specification from the user.

But **Wygodny** does not expressly disclose "...an article of manufacture, comprising a data storage medium tangibly embodying a program of machine readable instructions executable by an electronic processing apparatus...". However, **Lyndsey** discloses:

- *"An article of manufacture, comprising a data storage medium tangibly embodying a program of machine readable instructions executable by an electronic processing apparatus..."* (E.g., see Figure 1 & Column 4, lines 48-61).

Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to embody **Wygodny's** tracing instructions on an article of manufacture. The motivation to do so would have been to send the tracer program to the client as suggested by **Wygodny** (Column 3, lines 30-32), wherein the developer would not need to visit the remote site. Thus it would have been obvious, to a person of ordinary skill in the art to include a **Wygodny's** tracing program on an article of manufacture. See claim 1 for remaining limitations.

In regard to claim 26, the rejections of base claim 20 are incorporated. But, **Wygodny** does not expressly disclose "...requesting the user to assign conditions to the trigger expression". But **Lyndsey** discloses:

- *"...requesting the user to assign conditions to the trigger expression whereupon when the conditions are satisfied, a snapshot of the trigger expression is stored."* (E.g., see Figure 5, (86) & Column 6, lines 59-61),

wherein a tracing operation is stored when a predetermined condition is detected (satisfied), wherein the predetermined condition was input from the user (requested from the user) via the if condition (Figure 5, block 86).

Therefore, at the time the invention was made, it would have been obvious to a person of ordinary skill in the art to impose a trigger condition on **Wygodny's** tracing. The motivation to do so would have been to monitor the execution of the code based on selections or options from the user as suggested by **Wygodny** (Column 3, lines 7 –12), wherein the conditional trigger or expression would provide the user with further options. Furthermore, **Lyndsey** suggests "...the ability to trigger the generation of trace data based upon a specific data component so that information can be obtained relative to the data component during execution of logic units would be a valuable tool for developers in the debugging of programs". Thus it would have been obvious, to a person of ordinary skill in the art to include a conditional trace-point or trigger with **Wygodny's** tracing method.

In regard to claim 27, the rejections of base claim 25 are incorporated. Furthermore, **Wygodny** discloses:

- "...the user to indicate attached expressions whose states are also stored in a corresponding snapshot whenever a snapshot is stored for the trigger expression." (E.g., see Figure 3A & Column 18, lines 30-43), wherein the developer can choose any arguments, return values and selected source lines, thereby storing the state of a chosen function and attached expressions or variables (profile), wherein trace can then be displayed according to the developers choice (restoring) when requested.

In regard to claims **28-30**, this is a digital data processing device version of the article of manufacture claims that have been addressed in the above claims **25-27**, wherein all claimed limitations have also been addressed and/or cited as set forth above.

In regard to claim **31**, the rejections of base claim **28** are incorporated. Furthermore, **Wygodny** discloses:

- "...*execute on the same computer.*" (E.g., see Figure 1B & Column 5, lines 37-53), wherein the device that does the tracing (trace library, (102)) is on the clients computer.

In regard to claim **32**, the rejections of base claim **28** are incorporated. Furthermore, **Wygodny** discloses:

- "...*the first computer program and the second computer program execute on separate units connected by a data communications link.*" (E.g., see Figure 2 & Column 6, lines 55-65), wherein the device that does the tracing (trace library, (124)) is separated from the digital logic device and connected by a data communications link as shown.

### ***Conclusion***


Any inquiry concerning this communication or earlier communications from the examiner should be directed to John J. Romano whose telephone number is (571) 272-3872. The examiner can normally be reached on 8-5:30, M-F.



If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on (571) 272-3695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JJR



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SUPERVISORY PATENT EXAMINER